

REMARKS/ARGUMENTS

In this response, Claim 1 has been amended, Claims 2 and 11-20 have been withdrawn, and Claims 3-10 were previously cancelled. Thus, Claim 1 remains pending in the present application. The subject matter added in amended claim 1 is fully supported by the disclosure in the application (for example, at page 8 of the specification) and is not taught or suggested by the prior art.

I. Election/Restrictions

Applicant herein affirms the provisional election made without traverse during a telephone conversation with Mr. Brennan Swain on 2/28/07 to prosecute the invention of Group 1, claim 1.

II. Claim Rejections - 35 U.S.C. § 102(b)

Claim 2 is rejected under 35 U.S.C. § 102(b) as being anticipated by Pomerantz Edwin WO 9726018.

Specifically, the Examiner states in part:

Pomerantz teaches in vivo detection (corresponding to step b of claim 1) of oral premalignant lesions and oral carcinomas..with a dye stain composition which is selectively retained by cancerous and precancerous tissues..the step of applying to oral tissue, a stain composition comprising a non-toxic dye other than toluidine blue O (claim 1). Pomerantz also disclosed that this type of staining is dependent on the dye gaining access to internal subcellular structures such

as the nucleus. Such access is readily obtained only by "fixing" a tissue sample of formaldehyde or other reagent that disrupts the cellular membrane without destroying general cellular structure (page 2, line 26 bridging to page 3, line 4). Note that it is expected that the mitochondria as a subcellular structure would at least partially absorb the dye.

Office Action, dated 5/04/07, at pages 4-5.

Applicant respectfully disagrees. However, in order to expedite prosecution, Applicant has amended Claim 1 to recite "(a) contacting said oral epithelium containing cancerous cells in the locus of normal cells with one or more agents selected from the group consisting of alcian blue, malachite green, phenosafranin, acriflavine, pyronine Y, toluylene blue, brilliant green, peonidin, oxythiamine, tiemunium iodide, elliptinium acetate, furazolium chloride."

Pomerantz, however, does not disclose selective marking of the mitochondria, nor does Pomerantz disclose marking the mitochondria with any of the compounds/dyes listed in amended Claim 1.

There is no disclosure in Pomerantz of agents selected from the group consisting of alcian blue, malachite green, phenosafranin, acriflavine, pyronine Y, toluylene blue, brilliant green, peonidin, oxythiamine, tiemunium iodide, elliptinium acetate, or furazolium chloride.

To anticipate a claim under 35 U.S.C. § 102(b), the reference must teach each and every element of the claim. "A claim is anticipated only if each and every element in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. V. Union Oil of California. 814 F.2d 628, 631 (Fed. Cir. 1987).

Applicant respectfully submits that Pomerantz does not teach each and every element of claim 1 as amended.

There is no disclosure in Pomerantz as to the selective staining of the mitochondria. The Examiner points to the disclosure in Pomerantz, on page 2, line 26 bridging to page 3, line 4 with respect to toluidine blue staining of the nuclei. The disclosure in Pomerantz as to the staining of the nucleus and subcellular structures, in general, does not disclose selective marking of the mitochondria. Moreover, this disclosure in Pomerantz, however, is limited to toluidine blue staining, which is excluded from Claim 1.

In addition, Pomerantz's disclosure that toluidine blue staining "is dependent on the dye gaining access to internal subcellular structures such as the nucleus" is very different from an agent that selectively marks the mitochondria. Examiner states that "note that it is expected that the mitochondria as a subcellular structure would at least partially absorb the dye."

As one skilled in the art can appreciate, the different subcellular organelles are comprised of different cell signaling molecules or receptors, and different cell signaling molecules or receptors are activated/deactivated depending on the organelle. Different dyes/compounds having different structures will interact with these receptors differently, as is known in the art. Just because a dye gains access to one subcellular organelle does not mean it will gain access to another partially or completely.

In fact, Applicant discloses a mechanism for the selectiveness of the staining and/or killing of the cationic supravital mitochondrial marking agent that is different from that disclosed by Pomerantz. The selective staining and/or killing of the claimed marking agent results from "the selective uptake and selective retention of the agent in the mitochondria of cancer cells" and that this "uptake and retention is apparently due to the **higher electrical potential (negative charge on the inside of the membrane) of cancerous cells' mitochondria as compared to mitochondria of normal cells.**" Specification at the paragraph bridging pgs. 4-5. Applicant further states:

In fact, the selective marking of cancer cells by, and retention in the mitochondria of cancer cells of, supravital cationic dyes and other supravital cationic

marking agents, are related to one of the very characteristics of cancer cells that appears to be responsible for their rapid cloning and metastasizing ability, namely, that the higher electrical potential of the mitochondria of cancer cells is the source of cellular energy and is the driving force for ATP (adenosine triphosphate) production by the cells.

There is nothing in Pomerantz which recognizes or teaches this mechanism.

Applicant respectfully submits that Pomerantz does not teach each and every element of claim 1 as amended. Pomerantz does not disclose *selective marking of the mitochondria* as described and claimed in claim 1.

In view of the foregoing discussion, as well as the amendment to the claim, Applicant respectfully submits that the § 102(b) rejection based upon Pomerantz is now moot and should be withdrawn, and claim 1 as amended is believed to be allowable.

III. Claim Rejections - 35 U.S.C. § 103

Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Pomerantz Edwin WO 9726018 in view of Oseroff et al., Intramitochondrial Dyes Allow Selective in vitro Photolysis of Carcinoma Cells, PNAS, December 15, 1986, vol. 83, no. 24, 9729-9733 (hereafter Oseroff).

Specifically, the Examiner recites:

Pomerantz does not explicitly teach that the mitochondria is the subcellular structure that will be marked by the

dye. Oseroff teaches that carcinoma cell mitochondria preferentially accumulate and retain cationic dyes to a much greater extent than most normal cells. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a non-toxic dye other than toluidine blue O to mark premalignant carcinoma cells as Pomerantz teaches to target mitochondria that will be marked because Oseroff teaches that mitochondria in carcinomatous cells can absorb cationic dyes to a much greater extent than normal cells...

Office Action, dated 5/04/07, at page 6. Applicant respectfully disagrees.

No combination of Pomerantz and Oseroff disclose the invention of claim 1 because there is no disclosure in either Pomerantz or Oseroff of one or more agents selected from the group consisting of alcian blue, malachite green, phenosafranin, acriflavine, pyronine Y, toluylene blue, brilliant green, peonidin, oxythiamine, tiemunium iodide, elliptinium acetate, or furazolium chloride.

Oseroff discloses *photosynthesizers* such as rhodamine and cyanine dyes. Specifically, Oseroff discloses Rh 6G, Rh 123, Rh 1230(Br)₄, as well as cyanine dyes that absorb at wavelengths greater than 600nm (see, e.g., "Dye Selection" in the Results and Discussion section of the publication). There is no disclosure in Oseroff of the specific agents recited in amended claim 1.

Because the combination of Pomerantz and Oseroff does not disclose the invention in amended claims 1, Applicant respectfully requests that the rejection under § 103 should be withdrawn. In addition, amended claim 1 recites novel and non-obvious subject matter in view of Pomerantz and Oseroff. Reconsideration and withdrawal of the rejection is respectfully requested.

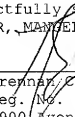
CONCLUSION

It is believed that the claim now pending patentably defines the subject invention over the prior art and is in condition for allowance. Applicant respectfully requests that the claim be allowed and earnestly solicits favorable action at the earliest possible date.

If any additional fees are due in this matter, please charge our Deposit Account No. 10-0440.

Respectfully Submitted,
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Dated: August 6, 2007 By:


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